

## Case Report

# MRI findings in a rare cause of bladder outlet obstruction

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We report the magnetic resonance imaging (MRI) findings in an unusual case of bladder outlet obstruction.

**CASE REPORT.** A 30 year old woman presented with acute urinary retention. She had a 3 month history of increasing difficulty passing urine. There was no history of haematuria or dysuria. An intravenous urogram revealed a large mass causing elevation of the bladder base on the right side. There was no significant ureteric obstruction, though the right ureter was slightly full (fig. 1).

Ultrasound examination showed a hypoechoic slightly inhomogenous mass measuring 6 cm by 5 cm (fig. 2). It was unclear whether this arose from within or from below the bladder. The uterus was slightly bulky but not in continuity with the mass. Cystoscopy suggested extrinsic compression and

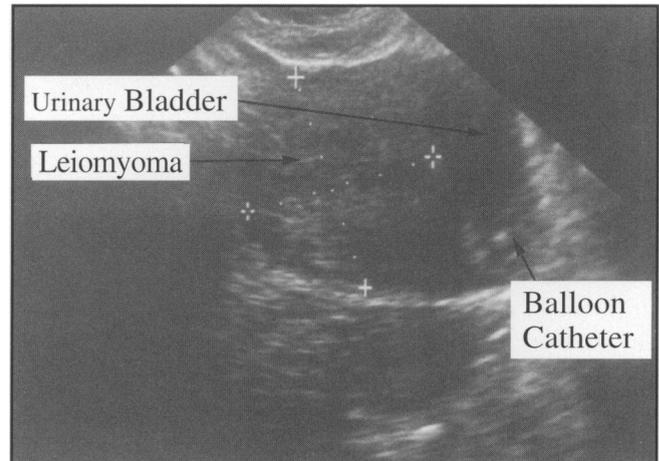


Fig 2. Ultrasound scan – Transverse scanning shows a mass of mixed echogenicity. It was unclear whether this was extrinsic or intrinsic. A catheter balloon can be seen lying on the left side of the bladder.

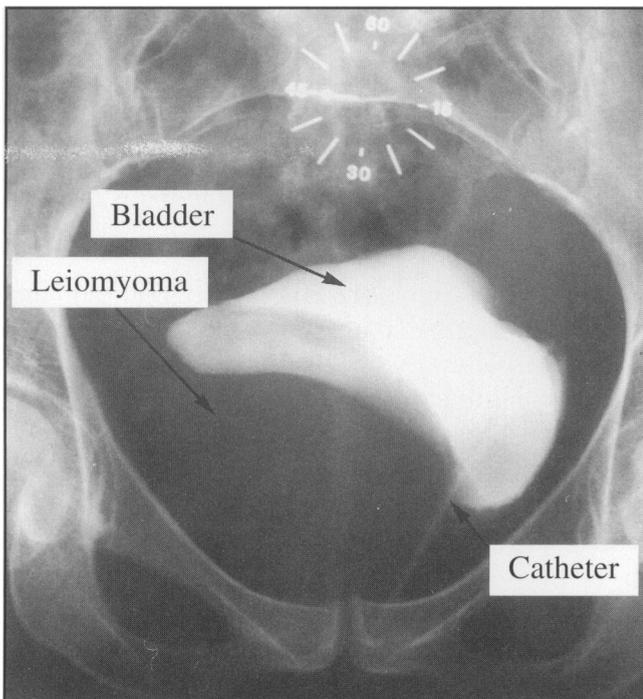


Fig 1. Intravenous Urogram – A mass can be seen arising from the right inferolateral margin of the bladder. A catheter is in situ.

no mucosal abnormality was seen. Fine needle aspiration revealed only a few degenerative cells and was insufficient for diagnosis.

MRI of the abdomen was performed. Coronal T1 weighted (T1W) – (500/11/1) (repetition time/echo time/excitations), axial multi-echo T2W – (2000/80-30), sagittal and coronal T2W Fast Spin Echo (FSE) – (4000/85/1) sequences were used. The lesion was clearly separate from the vagina, uterus and rectum. It arose from within the bladder

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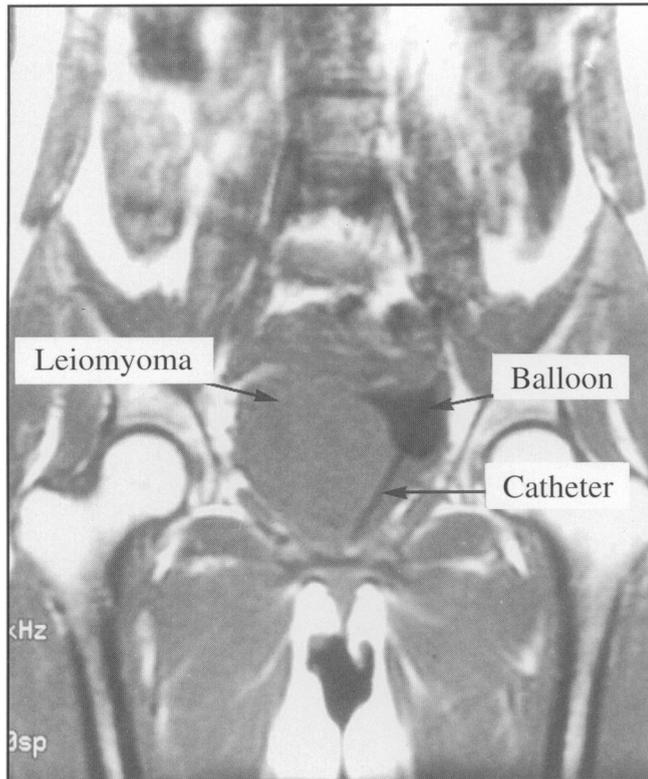


Fig 3. MRI Scan : Coronal (SE/TR500/TE11) – The mass shows a homogenous signal and appears to arise from within the bladder wall.

wall. On T1W images the mass had a homogenous intermediate signal intensity similar to muscle. A well defined margin was noted. Around the edge of this region there were several small foci of low attenuation.

At operation a large well defined mass was removed from the bladder wall.

Pathological examination revealed a 175 gram encapsulated ovoid firm tumour mass with a greyish white whorled appearance after sectioning. Histological examination showed interweaving bundles of uniform smooth muscle fibres, separated in some areas by collagenous fibrous tissue. There was no evidence of mitotic activity and no nuclear pleomorphism or necrosis to suggest malignancy. The features were those of a benign leiomyomatous tumour.

#### DISCUSSION

There have been three previous reports of bladder leiomyoma demonstrated by MRI. Tomoe et al<sup>1</sup> describe the tumour as having an inhomogenous intensity on T1W (spin echo 400/20). In our case the tumour appeared quite homogenous on T1W.

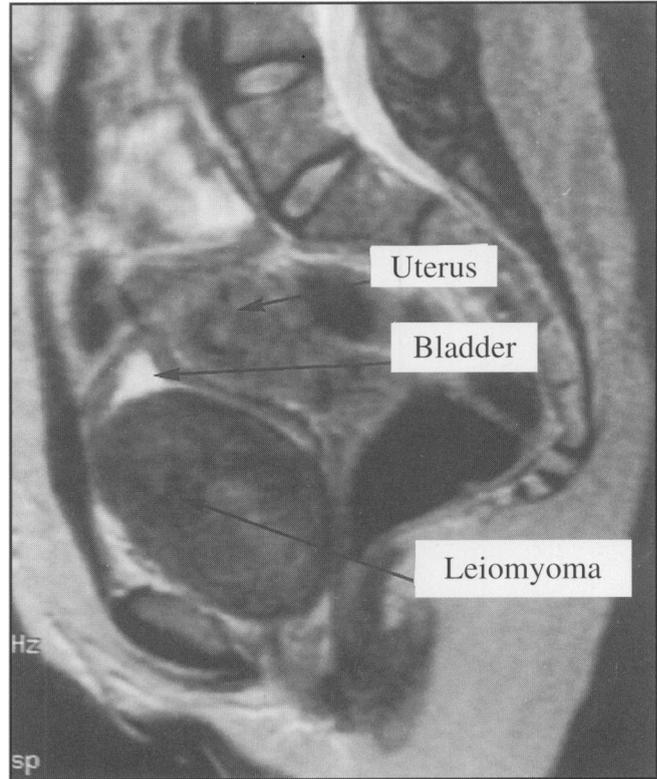


Fig 4. MRI Scan : Sagittal (FSE/TR4000/TE85) – The mass has an inhomogenous signal with a central region of diffuse high signal. The tumour has a well defined margin and is separate from the vagina and uterus. Small low signal foci can be seen.

On T2W sequences Maya et al<sup>3</sup> noted patchy areas of high intensity. We found a more confluent central area of high intensity on similar sequences. Tomoe et al report small foci of low signal intensity on T2W. We could identify multiple small foci of low signal throughout the leiomyoma. These may correspond to the areas of collagenous fibrous tissue.

Uterine leiomyomas are much more common and normally described pathologically as degenerative or non-degenerative.<sup>2</sup> The former create a low intensity nodule with a smooth surface on T2W. The signal intensity is intermediate on T1W. Degenerative uterine leiomyomas histologically show hyalinization, oedema and calcification. This produces an inhomogenous pattern with areas of high and low signal on T2W.

Leiomyomas may arise in any tissue containing smooth muscle. 95% are found within the genital tract.<sup>4</sup> They have also been described in the skin, retroperitoneal region, gastrointestinal tract and urinary tract. In the latter they are most frequently seen in the bladder or renal capsule.

Only 1-5% of bladder tumours are benign. Of these 35% are leiomyomas. Approximately 170 cases of bladder leiomyoma have been described. These usually occur in women between the ages of 30 and 55; sixty per cent are endovesical. Intramural leiomyomas account for 30% and 10% are extravescical. Bladder leiomyomas are usually asymptomatic; endovesical lesions however may cause dysuria, urinary infections, irritative urinary symptoms, haematuria or obstruction.

Other causes of submucosal masses include hamartomas, nephrogenic adenomas and phaeochromocytomas. Only bladder phaeochromocytomas have been described on MRI. These show iso or hypo-intense signal on T1W and markedly increased signal on T2W. Bladder leiomyomas are benign and surgical removal is usually curative.

#### REFERENCES

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